

CLAIM AMENDMENTS

- 1 1. (Currently Amended) A method of determining a Layer 2 path between a source
2 device and a destination device in a switched network, the method comprising the
3 computer-implemented steps of:
4 determining a Layer 3 path between the source device and the destination device,
5 wherein the Layer 3 path comprises information identifying two or more
6 Layer 3 devices;
7 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,
8 based on a spanning tree that is associated with a relevant VLAN for said each
9 contiguous pair of Layer 3 devices; and
10 concatenating the subpaths to result in creating and storing information representing
11 the Layer 2 path.
- 1 2. (Currently Amended) The method as recited in Claim 1, wherein determining a
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:
3 determining a first interface on a first node of the contiguous pair that is connected to
4 a second interface on a second node of the contiguous pair for a given subnet;
5 and
6 selecting [[a]] the relevant VLAN between the first and second nodes of the
7 contiguous pair based on the first and second interfaces; and
8 gathering current spanning tree information for the relevant VLAN.
- 1 3. (Currently Amended) The method as recited in Claim 2, wherein selecting [[a]] the
2 relevant VLAN between the first and second nodes of the contiguous pair comprises
3 the steps of:
4 selecting a matching native VLAN of the first and second nodes of the contiguous pair
5 as the relevant VLAN when the first interface and the second interface of the
6 first and second nodes respectively of the contiguous pair are non-VLAN
7 trunking interfaces;

8 selecting a matching active VLAN that is designated to carry traffic to a next hop as
9 the relevant VLAN when the first interface and the second interface of the first
10 and second nodes respectively of the contiguous pair are VLAN trunking
11 interfaces; and
12 selecting a native VLAN that is on a non-VLAN trunking interface as the relevant
13 VLAN when one of the first and second nodes of the contiguous pair has the
14 non-VLAN trunking interface.

1 4. (Currently Amended) The method as recited in Claim 1, wherein determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises the steps of:
3 tracing a first path segment from a first node of the contiguous pair by following [[a]]
4 the spanning tree associated with [[a]] the relevant VLAN for the contiguous
5 pair to a root of the spanning tree;
6 tracing a second path segment from a second node of the contiguous pair by following
7 the spanning tree associated with the relevant VLAN for the contiguous pair to
8 the root of the spanning tree; and
9 concatenating the first and second path segments to result in creating and storing the
10 subpath for the contiguous pair.

1 5. (Original) The method as recited in Claim 4, wherein concatenating the first path
2 segment and the second path segment to result in creating and storing the subpath for
3 the contiguous pair includes the step of eliminating extraneous devices from the first
4 and second path segments.

1 6. (Original) The method as recited in Claim 1, wherein concatenating the subpaths to
2 result in creating and storing information representing the Layer 2 path includes the
3 step of eliminating extraneous devices from the subpaths.

1 7. (Original) A method of determining a Layer 2 path between a source device and a
2 destination device in a switched network, the method comprising the computer-
3 implemented steps of:

4 determining a Layer 3 path between the source device and the destination device,
5 wherein the Layer 3 path comprises information identifying two or more Layer
6 3 devices;
7 identifying contiguous pairs of Layer 3 devices in the Layer 3 path;
8 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path;
9 determining whether any contiguous pair of Layer 3 devices has no subpath;
10 concluding that there is no Layer 2 path when any contiguous pair of Layer 3 devices
11 has no subpath;
12 eliminating extraneous devices in the subpaths; and
13 concatenating the subpaths to result in creating and storing information representing
14 the Layer 2 path when each of the contiguous pairs of Layer 3 devices has a
15 subpath.

- 1 8. (Previously Presented) The method as recited in Claim 7, wherein determining a
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:
3 determining a first interface on a first node of the contiguous pair that is connected to
4 a second interface on a second node of the contiguous pair for a given subnet
5 when both the first node of the contiguous pair and the second node of the
6 contiguous pair have non-trunking interfaces;
7 determining a first native VLAN of the first interface and a second native VLAN the
8 second interface;
9 determining whether the first native VLAN matches the second native VLAN;
10 selecting the matching VLAN as a relevant VLAN between the first and second nodes
11 of the contiguous pair when the first native VLAN matches the second native
12 VLAN;
13 gathering a current spanning tree information for the relevant VLAN;
14 tracing a first path segment from the first node of the contiguous pair to a root of the
15 spanning tree by following the current spanning tree information associated
16 with the relevant VLAN to the root of the spanning tree;
17 tracing a second path segment from the second node of the contiguous pair to the root
18 of the spanning tree by following the current spanning tree information
19 associated with the relevant VLAN;

20 eliminating extraneous devices in the first and second path segments; and
21 concatenating the first path segment and the second path segment to result in creating
22 and storing the subpath for the contiguous pair.

1 9. (Previously Presented) The method as recited in Claim 7, wherein determining a
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:
3 determining a non-trunking node of the contiguous pair when one of the nodes of the
4 contiguous pair for a given subnet has a non-trunking interface and the other
5 node of the contiguous pair has a trunking interface;
6 determining the non-trunking interface on the non-trunking node of the contiguous
7 pair as a first interface that is connected to a second interface on the other node
8 of the contiguous pair;
9 determining a native VLAN on the first interface;
10 determining whether there is an active VLAN on the second interface that matches the
11 native VLAN on the first interface;
12 selecting the matching VLAN as a relevant VLAN between the non-trunking node and
13 the other node of the contiguous pair when there is an active VLAN on the
14 second interface that matches the native VLAN on the first interface;
15 gathering a current spanning tree information for the relevant VLAN;
16 tracing a first path segment from the non-trunking node of the contiguous pair to a root
17 of the spanning tree by following the current spanning tree information
18 associated with the relevant VLAN to the root of the spanning tree;
19 tracing a second path segment from the other node of the contiguous pair to the root of
20 the spanning tree by following the current spanning tree information associated
21 with the relevant VLAN;
22 eliminating extraneous devices in the first and second path segments; and
23 concatenating the first path segment and the second path segment to result in creating
24 and storing the subpath for the contiguous pair.

1 10. (Previously Presented) The method as recited in Claim 7, wherein determining a
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:

3 determining a first interface on a first node of the contiguous pair that is connected to
4 a second interface on a second node of the contiguous pair for a given subnet
5 when both the first node of the contiguous pair and the second node of the
6 contiguous pair have non-trunking interfaces; and
7 determining a first active VLAN of the first interface associated with the given subnet
8 and a second active VLAN the second interface associated with the given
9 subnet;
10 determining whether the first active VLAN matches the second active VLAN;
11 selecting the matching VLAN as a relevant VLAN between the first and second nodes
12 of the contiguous pair when the first active VLAN matches the second active
13 VLAN;
14 gathering a current spanning tree information for the relevant VLAN;
15 tracing a first path segment from the first node of the contiguous pair to a root of the
16 spanning tree by following the current spanning tree information associated
17 with the relevant VLAN to the root of the spanning tree;
18 tracing a second path segment from the second node of the contiguous pair to the root
19 of the spanning tree by following the current spanning tree information
20 associated with the relevant VLAN;
21 eliminating extraneous devices in the first and second path segments; and
22 concatenating the first path segment and the second path segment to result in creating
23 and storing the subpath for the contiguous pair.

- 1 11. (Currently Amended) A computer-readable medium carrying one or more sequences
2 of one or more instructions for determining a Layer 2 path between a source device
3 and a destination device in a switched network, the one or more sequences of one or
4 more instructions including instructions which, when executed by one or more
5 processors, cause the one or more processors to perform the steps of:
6 determining a Layer 3 path between the source device and the destination device,
7 wherein the Layer 3 path comprises information identifying two or more
8 Layer 3 devices;

9 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,
10 based on a spanning tree that is associated with a relevant VLAN for said each
11 contiguous pair of Layer 3 devices; and
12 concatenating the subpaths to result in creating and storing information representing
13 the Layer 2 path.

1 12. (Currently Amended) The computer-readable medium as recited in Claim 11, wherein
2 determining a subpath for each contiguous pair of Layer 3 devices comprises the steps
3 of:
4 determining a first interface on a first node of the contiguous pair that is connected to
5 a second interface on a second node of the contiguous pair for a given subnet;
6 and
7 selecting ~~[[a]]~~ the relevant VLAN between the first and second nodes of the
8 contiguous pair based on the first and second interfaces; and
9 gathering current spanning tree information for the relevant VLAN.

1 13. (Currently Amended) The computer-readable medium as recited in Claim 12, wherein
2 selecting ~~[[a]]~~ the relevant VLAN between the first and second nodes of the
3 contiguous pair comprises the steps of:
4 selecting a matching native VLAN of the first and second nodes of the contiguous pair
5 as the relevant VLAN when the first interface and the second interface of the
6 first and second nodes respectively of the contiguous pair are non-VLAN
7 trunking interfaces;
8 selecting a matching active VLAN that is designated to carry traffic to a next hop as
9 the relevant VLAN when the first interface and the second interface of the first
10 and second nodes respectively of the contiguous pair are VLAN trunking
11 interfaces; and
12 selecting a native VLAN that is on a non-VLAN trunking interface as the relevant
13 VLAN when one of the first and second nodes of the contiguous pair has the
14 non-VLAN trunking interface.

1 14. (Currently Amended) The computer-readable medium as recited in Claim 11, wherein
2 determining a subpath for each contiguous pair of Layer 3 devices further comprises
3 the steps of:
4 tracing a first path segment from a first node of the contiguous pair by following [[a]]
5 the spanning tree associated with [[a]] the relevant VLAN for the contiguous
6 pair to a root of the spanning tree;
7 tracing a second path segment from a second node of the contiguous pair by following
8 the spanning tree associated with the relevant VLAN for the contiguous pair to
9 the root of the spanning tree; and
10 concatenating the first and second path segments to result in creating and storing the
11 subpath for the contiguous pair.

1 15. (Original) The computer-readable medium as recited in Claim 14, wherein
2 concatenating the first path segment and the second path segment to result in creating
3 and storing the subpath for the contiguous pair includes the step of eliminating
4 extraneous devices from the first and second path segments.

1 16. (Original) The computer-readable medium as recited in Claim 11, wherein
2 concatenating the subpaths to result in creating and storing information representing
3 the Layer 2 path includes the step of eliminating extraneous devices from the
4 subpaths.

1 17. (Previously Presented) A computer-readable medium carrying one or more sequences
2 of one or more instructions for determining a Layer 2 path between a source device
3 and a destination device in a switched network, the one or more sequences of one or
4 more instructions including instructions which, when executed by one or more
5 processors, cause the one or more processors to perform the steps of:
6 determining a Layer 3 path between the source device and the destination device,
7 wherein the Layer 3 path comprises information identifying two or more
8 Layer 3 devices;
9 identifying contiguous pairs of Layer 3 devices in the Layer 3 path;

determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path;
determining whether any contiguous pair of Layer 3 devices has no subpath;
concluding that there is no Layer 2 path when any contiguous pair of Layer 3 devices
has no subpath;
eliminating extraneous devices in the subpaths; and
concatenating the subpaths to result in creating and storing information representing
the Layer 2 path when each of the contiguous pairs of Layer 3 devices has a
subpath.

18. (Previously Presented) The computer-readable medium as recited in Claim 17,
wherein determining a subpath for each contiguous pair of Layer 3 devices comprises
the steps of:
determining a first interface on a first node of the contiguous pair that is connected to
a second interface on a second node of the contiguous pair for a given subnet
when both the first node of the contiguous pair and the second node of the
contiguous pair have non-trunking interfaces;
determining a first native VLAN of the first interface and a second native VLAN the
second interface;
determining whether the first native VLAN matches the second native VLAN;
selecting the matching VLAN as a relevant VLAN between the first and second nodes
of the contiguous pair when the first native VLAN matches the second native
VLAN;
gathering a current spanning tree information for the relevant VLAN;
tracing a first path segment from the first node of the contiguous pair to a root of the
spanning tree by following the current spanning tree information associated
with the relevant VLAN to the root of the spanning tree;
tracing a second path segment from the second node of the contiguous pair to the root
of the spanning tree by following the current spanning tree information
associated with the relevant VLAN;
eliminating extraneous devices in the first and second path segments; and
concatenating the first path segment and the second path segment to result in creating
and storing the subpath for the contiguous pair.

1 19. (Previously Presented) The computer-readable medium as recited in Claim 17,
2 wherein determining a subpath for each contiguous pair of Layer 3 devices comprises
3 the steps of:
4 determining a non-trunking node of the contiguous pair when one of the nodes of the
5 contiguous pair for a given subnet has a non-trunking interface and the other
6 node of the contiguous pair has a trunking interface;
7 determining the non-trunking interface on the non-trunking node of the contiguous
8 pair as a first interface that is connected to a second interface on the other node
9 of the contiguous pair;
10 determining a native VLAN on the first interface;
11 determining whether there is an active VLAN on the second interface that matches the
12 native VLAN on the first interface;
13 selecting the matching VLAN as a relevant VLAN between the non-trunking node and
14 the other node of the contiguous pair when there is an active VLAN on the
15 second interface that matches the native VLAN on the first interface;
16 gathering a current spanning tree information for the relevant VLAN;
17 tracing a first path segment from the non-trunking node of the contiguous pair to a root
18 of the spanning tree by following the current spanning tree information
19 associated with the relevant VLAN to the root of the spanning tree;
20 tracing a second path segment from the other node of the contiguous pair to the root of
21 the spanning tree by following the current spanning tree information associated
22 with the relevant VLAN;
23 eliminating extraneous devices in the first and second path segments; and
24 concatenating the first path segment and the second path segment to result in creating
25 and storing the subpath for the contiguous pair.

1 20. (Previously Presented) The computer-readable medium as recited in Claim 17,
2 wherein determining a subpath for each contiguous pair of Layer 3 devices comprises
3 the steps of:
4 determining a first interface on a first node of the contiguous pair that is connected to
5 a second interface on a second node of the contiguous pair for a given subnet

6 when both the first node of the contiguous pair and the second node of the
7 contiguous pair have non-trunking interfaces; and
8 determining a first active VLAN of the first interface associated with the given subnet
9 and a second active VLAN the second interface associated with the given
10 subnet;
11 determining whether the first active VLAN matches the second active VLAN;
12 selecting the matching VLAN as a relevant VLAN between the first and second nodes
13 of the contiguous pair when the first active VLAN matches the second active
14 VLAN;
15 gathering a current spanning tree information for the relevant VLAN;
16 tracing a first path segment from the first node of the contiguous pair to a root of the
17 spanning tree by following the current spanning tree information associated
18 with the relevant VLAN to the root of the spanning tree;
19 tracing a second path segment from the second node of the contiguous pair to the root
20 of the spanning tree by following the current spanning tree information
21 associated with the relevant VLAN;
22 eliminating extraneous devices in the first and second path segments; and
23 concatenating the first path segment and the second path segment to result in creating
24 and storing the subpath for the contiguous pair.

1 21. (Cancelled).

1 22. (Currently Amended) A computer apparatus comprising:
2 a processor; and
3 a memory coupled to the processor, the memory containing one or more sequences of
4 instructions for determining a Layer 2 path between a source device and a
5 destination device in a switched network, wherein execution of the one or more
6 sequences of instructions by the processor causes the processor to perform the
7 steps of:
8 determining a Layer 3 path between the source device and the destination device,
9 wherein the Layer 3 path comprises information identifying two or more Layer
10 3 devices;

11 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,
12 based on a spanning tree that is associated with a relevant VLAN for said each
13 contiguous pair of Layer 3 devices; and
14 concatenating the subpaths to result in creating and storing information representing
15 the Layer 2 path.

1 23. (Cancelled).

1 24. (Previously Presented) A network device that can determine a Layer 2 path between a
2 source device and a destination device in a switched network comprising:
3 a network interface;
4 a processor coupled to the network interface and receiving information from the
5 network interface; and
6 a computer-readable medium accessible by the processor and comprising one or more
7 sequences of instructions which, when executed by the processor, cause the
8 processor to carry out the steps of:
9 determining a Layer 3 path between the source device and the destination
10 device, wherein the Layer 3 path comprises information identifying two
11 or more Layer 3 devices;
12 identifying contiguous pairs of Layer 3 devices in the Layer 3 path;
13 determining a subpath for each contiguous pair of Layer 3 devices in the
14 Layer 3 path;
15 determining whether any contiguous pair of Layer 3 devices has no subpath;
16 concluding that there is no Layer 2 path when any contiguous pair of Layer 3
17 devices has no subpath;
18 eliminating extraneous devices in the subpaths; and
19 concatenating the subpaths to result in creating and storing information
20 representing the Layer 2 path when each of the contiguous pairs of
21 Layer 3 devices has a subpath.

1 25. (Previously Presented) A system for determining a Layer 2 path between a source
2 device and a destination device in a switched network, the system comprising:

3 means for determining a Layer 3 path between the source device and the destination
4 device, wherein the Layer 3 path comprises information identifying two or
5 more Layer 3 devices;
6 means for identifying contiguous pairs of Layer 3 devices in the Layer 3 path;
7 means for determining a subpath for each contiguous pair of Layer 3 devices in the
8 Layer 3 path;
9 means for determining whether any contiguous pair of Layer 3 devices has no subpath;
10 means for concluding that there is no Layer 2 path when any contiguous pair of
11 Layer 3 devices has no subpath;
12 means for eliminating extraneous devices in the subpaths; and
13 means for concatenating the subpaths to result in creating and storing information
14 representing the Layer 2 path when each of the contiguous pairs of Layer 3
15 devices has a subpath.

1 26. (Currently Amended) A ~~method of~~ system for determining a Layer 2 path between a
2 source device and a destination device in a switched network, the ~~method~~ system
3 comprising ~~the computer implemented steps of~~:

4 means for determining a Layer 3 path between the source device and the destination
5 device, wherein the Layer 3 path comprises information identifying two or
6 more Layer 3 devices;
7 means for determining a subpath for each contiguous pair of Layer 3 devices in the
8 Layer 3 path, based on a spanning tree that is associated with a relevant VLAN
9 for said each contiguous pair of Layer 3 devices; and
10 means for concatenating the subpaths to result in creating and storing information
11 representing the Layer 2 path.

1 27. (New) The computer apparatus as recited in Claim 22, wherein the one or more
2 sequences of instructions for determining a subpath for each contiguous pair of
3 Layer 2 devices further comprise one or more sequences of instructions which, when
4 executed by the processor causes the process to perform the steps of:

5 determining a first interface on a first node of the contiguous pair that is connected to
6 a second interface on a second node of the contiguous pair for a given subnet;
7 and
8 selecting the relevant VLAN between the first and second nodes of the contiguous pair
9 based on the first and second interfaces; and
10 gathering said current spanning tree information for the relevant VLAN.

1 28. (New) The computer apparatus as recited in Claim 27, wherein the one or more
2 sequences of instructions for selecting the relevant VLAN between the first and
3 second nodes of the contiguous pair further comprise one or more sequences of
4 instructions which, when executed by the processor causes the process to perform the
5 steps of:
6 selecting a matching native VLAN of the first and second nodes of the contiguous pair
7 as the relevant VLAN when the first interface and the second interface of the
8 first and second nodes respectively of the contiguous pair are non-VLAN
9 trunking interfaces;
10 selecting a matching active VLAN that is designated to carry traffic to a next hop as
11 the relevant VLAN when the first interface and the second interface of the first
12 and second nodes respectively of the contiguous pair are VLAN trunking
13 interfaces; and
14 selecting a native VLAN that is on a non-VLAN trunking interface as the relevant
15 VLAN when one of the first and second nodes of the contiguous pair has the
16 non-VLAN trunking interface.

1 29. (New) The computer apparatus as recited in Claim 22, wherein the one or more
2 sequences of instructions for determining a subpath for each contiguous pair of
3 Layer 2 devices further comprise one or more sequences of instructions which, when
4 executed by the processor causes the process to perform the steps of:
5 tracing a first path segment from a first node of the contiguous pair by following the
6 spanning tree associated with the relevant VLAN for the contiguous pair to a
7 root of the spanning tree;

8 tracing a second path segment from a second node of the contiguous pair by following
9 the spanning tree associated with the relevant VLAN for the contiguous pair to
10 the root of the spanning tree; and
11 concatenating the first and second path segments to result in creating and storing the
12 subpath for the contiguous pair.

1 30. (New) The computer apparatus as recited in Claim 29, wherein the one or more
2 sequences of instructions for concatenating the first path segment and the second path
3 segment to result in creating and storing the subpath for the contiguous pair further
4 include one or more sequences of instructions for eliminating extraneous devices from
5 the first and second path segments.

1 31. (New) The computer apparatus as recited in Claim 22, wherein the one or more
2 sequences of instructions for concatenating the subpaths to result in creating and
3 storing information representing the Layer 2 path further include one or more
4 sequences of instructions for eliminating extraneous devices from the subpaths.

1 32. (New) The network device as recited in Claim 24, wherein the one or more sequences
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices
3 further comprise one or more sequences of instructions which, when executed by the
4 processor, cause the processor to carry out the steps of:
5 determining a first interface on a first node of the contiguous pair that is connected to
6 a second interface on a second node of the contiguous pair for a given subnet
7 when both the first node of the contiguous pair and the second node of the
8 contiguous pair have non-trunking interfaces;
9 determining a first native VLAN of the first interface and a second native VLAN the
10 second interface;
11 determining whether the first native VLAN matches the second native VLAN;
12 selecting the matching VLAN as a relevant VLAN between the first and second nodes
13 of the contiguous pair when the first native VLAN matches the second native
14 VLAN;
15 gathering a current spanning tree information for the relevant VLAN;

16 tracing a first path segment from the first node of the contiguous pair to a root of the
17 spanning tree by following the current spanning tree information associated
18 with the relevant VLAN to the root of the spanning tree;
19 tracing a second path segment from the second node of the contiguous pair to the root
20 of the spanning tree by following the current spanning tree information
21 associated with the relevant VLAN;
22 eliminating extraneous devices in the first and second path segments; and
23 concatenating the first path segment and the second path segment to result in creating
24 and storing the subpath for the contiguous pair.

1 33. (New) The network device as recited in Claim 24, wherein the one or more sequences
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices
3 further comprises one or more sequences of instructions which, when executed by the
4 processor, cause the processor to carry out the steps of:
5 determining a non-trunking node of the contiguous pair when one of the nodes of the
6 contiguous pair for a given subnet has a non-trunking interface and the other
7 node of the contiguous pair has a trunking interface;
8 determining the non-trunking interface on the non-trunking node of the contiguous
9 pair as a first interface that is connected to a second interface on the other node
10 of the contiguous pair;
11 determining a native VLAN on the first interface;
12 determining whether there is an active VLAN on the second interface that matches the
13 native VLAN on the first interface;
14 selecting the matching VLAN as a relevant VLAN between the non-trunking node and
15 the other node of the contiguous pair when there is an active VLAN on the
16 second interface that matches the native VLAN on the first interface;
17 gathering a current spanning tree information for the relevant VLAN;
18 tracing a first path segment from the non-trunking node of the contiguous pair to a root
19 of the spanning tree by following the current spanning tree information
20 associated with the relevant VLAN to the root of the spanning tree;

21 tracing a second path segment from the other node of the contiguous pair to the root of
22 the spanning tree by following the current spanning tree information associated
23 with the relevant VLAN;
24 eliminating extraneous devices in the first and second path segments; and
25 concatenating the first path segment and the second path segment to result in creating
26 and storing the subpath for the contiguous pair.

1 34. (New) The network device as recited in Claim 24, wherein the one or more sequences
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices
3 further comprise one or more sequences of instructions which, when executed by the
4 processor, cause the processor to carry out the steps of:
5 determining a first interface on a first node of the contiguous pair that is connected to
6 a second interface on a second node of the contiguous pair for a given subnet
7 when both the first node of the contiguous pair and the second node of the
8 contiguous pair have non-trunking interfaces; and
9 determining a first active VLAN of the first interface associated with the given subnet
10 and a second active VLAN the second interface associated with the given
11 subnet;
12 determining whether the first active VLAN matches the second active VLAN;
13 selecting the matching VLAN as a relevant VLAN between the first and second nodes
14 of the contiguous pair when the first active VLAN matches the second active
15 VLAN;
16 gathering a current spanning tree information for the relevant VLAN;
17 tracing a first path segment from the first node of the contiguous pair to a root of the
18 spanning tree by following the current spanning tree information associated
19 with the relevant VLAN to the root of the spanning tree;
20 tracing a second path segment from the second node of the contiguous pair to the root
21 of the spanning tree by following the current spanning tree information
22 associated with the relevant VLAN;
23 eliminating extraneous devices in the first and second path segments; and
24 concatenating the first path segment and the second path segment to result in creating
25 and storing the subpath for the contiguous pair.

1 35. (New) The system as recited in Claim 25, wherein the means for determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises:
3 means for determining a first interface on a first node of the contiguous pair that is
4 connected to a second interface on a second node of the contiguous pair for a
5 given subnet when both the first node of the contiguous pair and the second
6 node of the contiguous pair have non-trunking interfaces;
7 means for determining a first native VLAN of the first interface and a second native
8 VLAN the second interface;
9 means for determining whether the first native VLAN matches the second native
10 VLAN;
11 means for selecting the matching VLAN as a relevant VLAN between the first and
12 second nodes of the contiguous pair when the first native VLAN matches the
13 second native VLAN;
14 means for gathering a current spanning tree information for the relevant VLAN;
15 means for tracing a first path segment from the first node of the contiguous pair to a
16 root of the spanning tree by following the current spanning tree information
17 associated with the relevant VLAN to the root of the spanning tree;
18 means for tracing a second path segment from the second node of the contiguous pair
19 to the root of the spanning tree by following the current spanning tree
20 information associated with the relevant VLAN;
21 means for eliminating extraneous devices in the first and second path segments; and
22 means for concatenating the first path segment and the second path segment to result
23 in creating and storing the subpath for the contiguous pair.

1 36. (New) The system as recited in Claim 25, wherein the means for determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises:
3 means for determining a non-trunking node of the contiguous pair when one of the
4 nodes of the contiguous pair for a given subnet has a non-trunking interface
5 and the other node of the contiguous pair has a trunking interface;

6 means for determining the non-trunking interface on the non-trunking node of the
7 contiguous pair as a first interface that is connected to a second interface on the
8 other node of the contiguous pair;
9 means for determining a native VLAN on the first interface;
10 means for determining whether there is an active VLAN on the second interface that
11 matches the native VLAN on the first interface;
12 means for selecting the matching VLAN as a relevant VLAN between the non-
13 trunking node and the other node of the contiguous pair when there is an active
14 VLAN on the second interface that matches the native VLAN on the first
15 interface;
16 means for gathering a current spanning tree information for the relevant VLAN;
17 means for tracing a first path segment from the non-trunking node of the contiguous
18 pair to a root of the spanning tree by following the current spanning tree
19 information associated with the relevant VLAN to the root of the spanning
20 tree;
21 means for tracing a second path segment from the other node of the contiguous pair to
22 the root of the spanning tree by following the current spanning tree information
23 associated with the relevant VLAN;
24 means for eliminating extraneous devices in the first and second path segments; and
25 means for concatenating the first path segment and the second path segment to result
26 in creating and storing the subpath for the contiguous pair.

- 1 37. (New) The system as recited in Claim 25, wherein the means for determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises:
3 means for determining a first interface on a first node of the contiguous pair that is
4 connected to a second interface on a second node of the contiguous pair for a
5 given subnet when both the first node of the contiguous pair and the second
6 node of the contiguous pair have non-trunking interfaces; and
7 means for determining a first active VLAN of the first interface associated with the
8 given subnet and a second active VLAN the second interface associated with
9 the given subnet;

10 means for determining whether the first active VLAN matches the second active
11 VLAN;
12 means for selecting the matching VLAN as a relevant VLAN between the first and
13 second nodes of the contiguous pair when the first active VLAN matches the
14 second active VLAN;
15 means for gathering a current spanning tree information for the relevant VLAN;
16 means for tracing a first path segment from the first node of the contiguous pair to a
17 root of the spanning tree by following the current spanning tree information
18 associated with the relevant VLAN to the root of the spanning tree;
19 means for tracing a second path segment from the second node of the contiguous pair
20 to the root of the spanning tree by following the current spanning tree
21 information associated with the relevant VLAN;
22 means for eliminating extraneous devices in the first and second path segments; and
23 means for concatenating the first path segment and the second path segment to result
24 in creating and storing the subpath for the contiguous pair.

1 38. (New) The system as recited in Claim 26, wherein the means for determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises:
3 means for determining a first interface on a first node of the contiguous pair that is
4 connected to a second interface on a second node of the contiguous pair for a
5 given subnet; and
6 means for selecting the relevant VLAN between the first and second nodes of the
7 contiguous pair based on the first and second interfaces; and
8 means for gathering said current spanning tree information for the relevant VLAN.

1 39. (New) The system as recited in Claim 38, wherein the means for selecting the
2 relevant VLAN between the first and second nodes of the contiguous pair further
3 comprises:
4 means for selecting a matching native VLAN of the first and second nodes of the
5 contiguous pair as the relevant VLAN when the first interface and the second
6 interface of the first and second nodes respectively of the contiguous pair are
7 non-VLAN trunking interfaces;

8 means for selecting a matching active VLAN that is designated to carry traffic to a
9 next hop as the relevant VLAN when the first interface and the second
10 interface of the first and second nodes respectively of the contiguous pair are
11 VLAN trunking interfaces; and

12 means for selecting a native VLAN that is on a non-VLAN trunking interface as the
13 relevant VLAN when one of the first and second nodes of the contiguous pair
14 has the non-VLAN trunking interface.

1 40. (New) The system as recited in Claim 26, wherein the means for determining a
2 subpath for each contiguous pair of Layer 3 devices further comprises:

3 means for tracing a first path segment from a first node of the contiguous pair by
4 following the spanning tree associated with the relevant VLAN for the
5 contiguous pair to a root of the spanning tree;

6 means for tracing a second path segment from a second node of the contiguous pair by
7 following the spanning tree associated with the relevant VLAN for the
8 contiguous pair to the root of the spanning tree; and

9 means for concatenating the first and second path segments to result in creating and
10 storing the subpath for the contiguous pair.

1 41. (New) The system as recited in Claim 40, wherein the means for concatenating the
2 first path segment and the second path segment to result in creating and storing the
3 subpath for the contiguous pair includes means for eliminating extraneous devices
4 from the first and second path segments.

1 42. (New) The system as recited in Claim 26, wherein the means for concatenating the
2 subpaths to result in creating and storing information representing the Layer 3 path
3 includes means for eliminating extraneous devices from the subpaths.